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Superfund Technical Assessment & Response Team V
EPA CONTRACT 68HE0319D0004

April 12, 2021

Mr. Peter Lisichenko, On-Scene Coordinator
U.S. Environmental Protection Agency, Region II
Superfund and Emergency Management Division
2890 Woodbridge Avenue
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EPA CONTRACT No: 68HE0319D0004
TD No: TO-0036-0021
DC No: STARTV-02-D-0124
SUBJECT: SITE-SPECIFIC COMMUNITY AIR MONITORING PLAN
HOLY TRINITY CEMETERY SITE, AREA 6 & 7
LEWISTON, NIAGARA COUNTY, NEW YORK

Dear Mr. Lisichenko,

Enclosed please find the Site-Specific Community Air Monitoring Plan (CAMP), for the Removal Action (RV2) activities to be conducted by the U.S. Environmental Protection Agency, Region II (EPA) with the support of Weston Solutions, Inc., Superfund Technical Assessment & Response Team V (START V) at the Holy Trinity Cemetery Site, Area 6 & 7 (the Site) in Lewiston, Niagara County, New York. This plan covers the air monitoring and sampling activities to be conducted at the Site beginning on April 19, 2021.

If you have any questions or comments, please do not hesitate to contact me at (732) 425-1175.

Sincerely,

WESTON SOLUTIONS, INC.

Sean Quinn
START V Site Project Manager

Enclosure
cc: TDD File No.: TO-0036-0021

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On-Site Environmental, Inc., and Sovereign Consulting, Inc.



SITE-SPECIFIC COMMUNITY AIR MONITORING PLAN

HOLY TRINITY CEMETERY SITE, AREA 6 & 7

Lewiston, Niagara County, New York

Site Code: A23M

CERCLIS Code: NYN000206698

Prepared by:

Superfund Technical Assessment & Response Team V
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- RADēCO Model H-810 Calibration Functional Check Form F001
- Sample Control Form and Chain of Custody Form F002
- Personnel Air Monitoring and Exposure Estimate Form F003

1.0 INTRODUCTION

This Site-Specific Community Air Monitoring Plan (CAMP) has been prepared for the Removal Action to be implemented at the Holy Trinity Cemetery Site, Area 6 & 7 Site (the Site) beginning on April 19, 2021. The Site consists of approximately 2.91 acres of radionuclide contamination located at a cemetery that is approximately 31.5 acres in size. The Site is owned by Holy Trinity Cemetery of Divine Mercy Parish in Lewiston, Niagara County, New York. The areas of observed contamination in the north-western portion of the property on a relatively flat and slightly elevated grassy field, under existing roadways, and at an isolated area adjacent to the Interstate 190 (I-190) corridor. There is one building on the Site which is utilized as both a residence and a cemetery maintenance facility. The Site is bordered to the north and east by I-190; to the south by Gate of Heaven Cemetery; and to the west by Robert Avenue and a residential area.

Based on historical information, EPA identified nine AOCs at the Site, including six on-site AOCs and three off-site AOCs. The on-site AOCs are identified as Area 1 through Area 4 and Area 8, comprising the grassy open fields and undeveloped portions of the Site, and Area 9, comprising portions of the non-public Site road network. The off-site AOCs are identified as Area 5 through Area 7, comprising three residences located adjacent to the Site, including 5374 Robert Avenue (Area 5), 5380 Robert Avenue (Area 6), and 5382 Robert Avenue (Area 7).

In 1978, the U.S. Department of Energy (DOE) conducted an aerial radiological survey of the Niagara Falls region and identified more than 15 properties having elevated levels of radiation above background levels. It is believed that, in the early 1960s, slag from an unknown source was used as fill on the properties prior to paving. Based on the original survey and subsequent investigations, it is believed that the radioactive slag was deposited on the Site.

In February 1980, the New York State Department of Health (NYSDOH) Bureau of Radiological Health and the Niagara County Health Department conducted a ground radiological survey of the Site to identify areas with elevated radioactivity resulting from the use of radioactive slag as fill on the property. The survey was conducted based on information that the slag used at the cemetery was from the same source used at two other locations in nearby Niagara Falls, which had been identified by the NYSDOH as containing elevated levels of radioactivity. During the survey, cemetery personnel showed NYSDOH a slag pile located near the caretaker's garage in the western portion of the property. Cemetery personnel stated that this slag was used as fill for the cemetery roads throughout the property.

In addition, the slag was used as fill for the base of two proposed roadbeds that extended approximately 500 to 600 feet from the caretaker's garage, northwest toward Robert Avenue. At the time of the survey, the construction of these roads had been abandoned. The underlying slag base was covered with an unknown amount of soil and was left as an open field. Using an Eberline PRM-7 radiation meter, ground radiological survey of the slag pile indicated gamma radiation measuring 250 microrentgens per hour ($\mu\text{R/hr}$) and along cemetery roads, gamma readings ranged from 5 $\mu\text{R/hr}$ (*i.e.*, background concentration) to 30 $\mu\text{R/hr}$. Gamma readings along the abandoned roadbeds ranged from 200 $\mu\text{R/hr}$ to 400 $\mu\text{R/hr}$. Samples of the slag were collected as part of the investigation. Laboratory analysis of the samples indicated that the concentrations of isotopic uranium, isotopic thorium, radium-226 (Ra-226), and radium-228 (Ra-228), were significantly higher than background values.

In October 2006, the New York State Department of Environmental Conservation (NYSDEC) and the Niagara County Health Department conducted a reconnaissance of the Site. At the time, the slag pile previously observed near the caretaker's garage was no longer on the Site; the current caretaker had neither knowledge of the slag pile, nor what happened to it. The caretaker also indicated that children living nearby used this area for recreation. Since the 1980 NYSDOH site investigation, trees had grown through the abandoned slag roadbeds, pushing the slag to the surface. As part of the Site visit, NYSDEC conducted a ground radiological survey with an Exploranium GR-135. Radiological measurements taken while walking along the roadbed indicated gamma readings ranging from 200 to 450 $\mu\text{R/hr}$ at waist height (approximately 1 meter/3 feet above the ground) and contact reading (approximately 1 inch above the ground) ranging from 450 to 570 $\mu\text{R/hr}$. Contact reading taken next to exposed slag near a tree was documented at 700 $\mu\text{R/hr}$. The NYSDEC collected four slag samples which were analyzed for isotopic uranium and isotopic thorium via gamma-ray spectroscopy. Laboratory analytical results indicated the presence of uranium-238/234 (U-238/234) at concentrations ranging from 114 picocuries per gram (pCi/g) to 1,664 pCi/g and thorium-232 (Th-232) from 114 pCi/g to 898 pCi/g.

In May 2007, NYSDEC visited the Site to verify contamination in an on-site debris pile using gamma-ray spectroscopy. During a 5-minute static survey, Ra-226 was the only radionuclide identified. A similar survey conducted on one of the roadbeds confirmed the presence of Th-232. During a reconnaissance performed by the NYSDOH and NYSDEC in July 2013, a ground radiological survey of on-site roadways and along the back roadway leading off-site was conducted using a pressurized ion chamber (PIC) and a sodium iodide (NaI) 2x2 scintillator. Measurements taken along the roadways with the PIC indicated gamma levels up to 51 $\mu\text{R/hr}$ and up to 50,000 counts per minute (cpm) with the NaI scintillator.

On December 12 and 13, 2013, EPA's contractor, Weston Solutions, Inc., Site Assessment Team (SAT), collected a total of 14 subsurface soil samples and three slag samples from the Site. Soil samples were also collected from two locations suspected to be outside of the source area in order to document background conditions. At each sample location, soil samples were collected directly beneath slag material; at locations where a radioactive fill layer was not visually observed the soil sample was collected at the equivalent depth interval. Each slag sample consisted of one single piece of slag material. The soil samples were analyzed by Test America Laboratories (TestAmerica) for target analyte list (TAL) metals via EPA SW846; isotopic thorium and isotopic uranium via DOE alpha spectroscopy Health and Safety Laboratory (HASL)-300 Method A-01-R; Ra-226, Ra-228, and other gamma emitting radioisotopes via DOE gamma spectroscopy HASL-300 Method GA-01-R. The slag samples were analyzed for the same radiological parameters as the soil samples but were not analyzed for TAL metals. Analytical results indicated that concentrations of radionuclides in all the slag samples and seven soil samples including the field duplicate, were significantly higher than at background conditions.

On May 1, 2014, SAT collected radon and thoron concentration measurements from locations on and in the vicinity of the Site. At the selected locations in background areas, above the source material, and off the source area, radon, and thoron concentration measurements in picocuries per liter (pCi/L) were collected with RAD7 radon/thoron detectors. The radon and thoron measurements were collected at heights of one meter above the ground surface. Radon and thoron concentrations were at normal background levels.

On August 10 through 13, 2015, EPA and RST 3, currently START V, conducted a Removal Assessment of the Site. The presence/absence of radon, thoron, and gamma radiation was verified through ground radiological surveys. Areas of observed contamination were delineated by comparing radiological survey measurements from suspected source areas with measurements obtained from a background location. Laboratory analytical results were used to verify the concentration of radon in living spaces of the one on-site building and to determine the presence of residual contamination and potential releases of radiation-containing material in soil and fill at the Site. Ground radiological survey measurements were collected on-site using fluke pressurized ionization chamber (FPIC), Ludlum-2241, and Reuter-Stokes high pressure ion chamber (HPIC). To define the basis for comparing ground radiological survey results, it was necessary to establish background reading at the Site. Background readings were collected with each of the instruments from locations on-site that were presumed to be unaffected by historic Site activities. Background gamma measurements included readings collected with Ludlum-2241 (9,900 to 10,700 cpm), FPIC (7 to 16 $\mu\text{R/hr}$ at waist height and 9 to 17 $\mu\text{R/hr}$ at contact), and HPIC (9.52 $\mu\text{R/hr}$). Specific isotopes were identified using a Berkeley Nucleonics Corporation (BNC) SAM 940™ (SAM 940) portable radioisotope identification system. A DurrIDGE RAD7 electronic radon/thoron detector was utilized to measure the concentration of radon and thoron in ambient air. Background radon/thoron concentrations ranged from 0 to less than ($<$) 4.0 pCi/L, and no radionuclides were detected with the SAM-940 at the selected background location.

During the August 2015 radiological investigation, gamma measurements taken with the Ludlum-2241 in the one on-site building were generally at background levels, with a few locations indicating gamma readings that were slightly above background. The highest gamma measurement collected in the one on-site building was 16,100 cpm in the viewing room. Gamma measurements taken with the Ludlum-2241 in exterior locations throughout the Site were generally above background, with the highest reading at 569,000 cpm (more than 53 times [53x] above background). Gamma measurements collected with the FPIC in the one on-site building were generally at background levels ranging from 3 $\mu\text{R/hr}$ (at waist height) to 19 $\mu\text{R/hr}$ (at contact). Gamma measurements taken with the HPIC at three locations in the one on-site building ranged from 9.56 $\mu\text{R/hr}$ to 10.94 $\mu\text{R/hr}$. Exterior HPIC gamma measurements were generally above background. The HPIC gamma measurements collected from eight locations selected on-site for soil sampling ranged from 10.02 $\mu\text{R/hr}$ to 256.34 $\mu\text{R/hr}$ (more than 26x above background). At one location on the east side of the on-site dirt road, Ra-226 was detected with the SAM-940. Based upon results from radon/thoron surveys conducted with RAD7, radon and thoron concentrations were at normal background levels in the on-site building; however, at all eight soil sampling locations, radon concentration was above background in contact measurement collected from one soil sampling location, thoron concentrations were above background in waist-level measurements collected at five soil sampling locations and above background in contact measurements collected at two soil sampling locations.

On August 10 through 13, 2015, RST-3 procured National Radon Safety Board (NRSB)-certified company, Accu-View Property Inspections (Accu-View), utilized passive activated charcoal canisters (radon canisters) to conduct short-term radon sampling tests that lasted a minimum of approximately 72 hours. A total of 15 radon canisters, including two field duplicates, and one field blank, were deployed in the one on-site building. Radon testing locations were focused on frequently occupied spaces in the building. Analytical results indicated that concentrations of

radon were below the EPA Site-Specific Action Level (SSAL) of 4.0 pCi/L in all the living spaces sampled in the building.

On August 12, 2015, RST 3 conducted a soil sampling event to verify the presence of residual radioactive material in on-site soil. Based on radiological survey data from SAT's prior site investigation, and survey data from the August 2015 radiological investigation, soil sampling locations suspected to contain radionuclides and metals/metalloids were identified on-site by EPA. A total of nine soil samples, including one field duplicate, were collected at depths 0 to 4 feet below ground surface (bgs) from eight location on-site. The soil samples were analyzed by TestAmerica for TAL metals (including mercury) via EPA SW846; isotopic thorium and isotopic uranium via alpha spectroscopy HASL-300-A-01-R; Ra-226 (21 days ingrowth), Ra-228 and other gamma emitting radioisotopes via gamma spectroscopy HASL-300-GA-01-R. Analytical results indicated that concentrations of Ra-226 exceeded the EPA SSAL (established by EPA in August 2015) of 4.06 pCi/g in three of the nine soil samples. The concentration of cobalt was above the EPA Removal Management Level (RML) of 70 milligrams per kilograms (mg/kg) in one soil sample with exceedance concentration at 110 mg/kg. Thallium concentration was above the EPA RML of 2.3 mg/kg in one soil sample with exceedance concentration at 2.4 mg/kg.

On August 12, 2015, EPA collected four wipe samples including one field blank, from access doorways in the on-site building. The wipe samples were collected to determine if radiation-containing material was being tracked into the building. The wipe samples were analyzed by EPA using Ludlum-3030. Based upon the analytical results of the wipe samples for the selected counting durations, the minimum detectable concentration (MDC) for 100 square centimeters (cm²) were determined as 0.80 disintegrations per minute (dpm) and 29.5 dpm respectively, for alpha and beta particles. These levels were below the 100 dpm and 1,000 dpm respectively, for alpha and beta counts outlined in the New York City Department of Health and Mental Hygiene (NYC DOHMH) Article 175 of the NYC Health Code, "Radiation Control", §175.03 - Release of Materials or Facilities, which was adopted by EPA as the SSAL for alpha and beta particles. Alpha and beta counts for all the wipe samples were at the natural background level conservatively estimated by counting a blank wipe.

In April 2016, EPA performed Removal Assessment activities at AOCs associated with the Site. Utilizing an all-terrain vehicle (ATV), RST 3 conducted ground radiological survey at seven of the nine AOCs to identify locations indicating presence of radiation-containing material and to define the extent of contamination in the AOCs. Air monitoring and sampling was performed daily at the on-site AOCs during the radiological survey activities to verify that the survey activities being performed on-site were not generating fugitive dust to levels that would potentially expose on-site personnel and the public to site-related contaminants. Based on the results of the ground radiological survey, approximately 50 percent (%) of Area 1; portions northeast, south, and southwest of Area 2, as well as portions of the non-public Site road network immediately south of Area 2; discontinuous hot spots identified in the southern and southeast portions of Area 3; a dirt pile located on the eastern portion of Area 4; and portions of Area 9 immediately south of Area 1 and Area 3; all indicated gamma readings exceeding 3x background. Gamma readings at Area 5 and Area 8 were at normal background levels. Baseline air monitoring results indicated that particulate concentrations were generally below 50 micrograms per cubic meter (µg/m³). Daily air monitoring results indicated that particulate concentrations during radiological survey activities were generally below the minimum SSAL of 100 µg/m³. Screening results of air filter samples

collected with the RADēCO during radiological survey activities indicated that alpha, beta, and gamma particles were at normal background levels.

On April 22 through 24, 2016, RST-3 procured NRSB-certified Company, Accu-View, conducted radon sampling in the residence at Area 5 by to verify if radon was present in living spaces of the residence and, subsequently determine if the installation of a radon mitigation system in the residence was necessary. Analytical results of 12 pre-mitigation radon samples, including one field duplicate, and one field blank, collected from the residence in Area 5 indicated radon concentrations were equal to or exceeded the EPA SSAL of 4.0 picocuries per liter (pCi/L) in five of the samples. Based on the pre-mitigation radon analytical results, on May 24, 2016, EPA conducted a walk-through at Area 5 and identified a location in the residence to install a radon mitigation system. On June 15, 2016, a radon mitigation system was installed in the residence at Area 5. On August 1 through 4, 2016, a post-mitigation radon sampling event was performed to verify the effectiveness of the radon mitigation system in reducing the concentration of radon in the residence. Analytical results of the post-mitigation radon sampling event indicated that radon concentrations were at normal background levels.

On August 18, 2016, RST 3 collected a total of 30 soil samples from seven soil sampling locations identified by the EPA at Area 5. Using non-dedicated hand shovels and pickaxe, test pits were advanced to depths bgs. Soil samples were collected from six locations at depths 0 to 6, 6 to 12, 12 to 18, and 18 to 24 inches bgs, and from one location at depths 2 to 8, 8 to 14, 14 to 20, and 20 to 26 inches bgs. All the soil samples were analyzed by PACE Analytical Services (PACE) for isotopic thorium, isotopic uranium, and other alpha emitting actinides via alpha spectroscopy HASL-300 Method U-02; radium-226 (21-day ingrowth), radium-228, and other gamma emitting radioisotopes via gamma spectroscopy EPA Method 901.1. Analytical results of the 30 soil samples, including two field duplicates, collected from Area 5, indicated that concentrations of target radionuclides were below the EPA SSALs.

On October 14, 2016, RST 3 utilized the Ludlum-2241 and NaI 3x3 scintillator with the VIPER setup to perform exterior radiological survey at two off-site AOCs, Area 6 and Area 7. Background gamma reading was approximately 13 μ R/hr. Radiological survey completed at both AOCs indicated portions of the property boundary between Area 6 and Area 7 had gamma readings ranging from 26 μ R/hr to 39 μ R/hr, which exceeds 2x to 3x background, respectively. Consequently, RST 3 advanced two test pits in Area 6 and one test pit in Area 7 using non-dedicated hand shovels and pickaxes to a depth of 2 feet bgs. at the locations where elevated gamma measurements were identified. The soil samples were screened using HPGe and then submitted for laboratory gamma spectroscopy and alpha spectroscopy, analyses. Based on screening and analytical results, concentrations of Ra-226 exceeded the EPA SSAL of 4.06 pCi/g in the soil samples collected from both properties.

On May 12 through 15, 2017, RST 3-procured NRSB-certified company, Accu-View, performed radon sampling in the residences at Area 6 and Area 7. A total of 17 radon canister samples, including one field duplicate (co-located sample), were collected from the residence at Area 6 and a total of 18 radon canister samples, including one field duplicate, were collected from the residence at Area 7. Analytical results of the radon samples collected from both properties were below the EPA Action Level of 4.0 pCi/L for radon.

On May 16, 2017, RST 3 conducted test pit soil sampling at Area 6 and Area 7. Utilizing a mini excavator, one test pit each was advanced to depths 4 feet bgs. at the selected locations in both AOCs. A total of eight heterogeneous samples of soil/slag/rock were collected from the one test pit in Area 6 and nine heterogeneous samples of soil/slag/rock, including one field duplicate, were collected from the one test pit in Area 7. The samples were submitted for laboratory radiochemistry (gamma spectroscopy and alpha spectroscopy) analysis. Based on analytical results, concentrations of Ra-226 exceeded the EPA SSAL of 4.06 pCi/g in the soil samples collected from both properties.

1.1 Community Air Monitoring Program Objectives

The primary contaminants of concern in on-site soils are radioactive materials from the decay process of uranium and thorium, which have been identified at concentrations exceeding the EPA Site-Specific Preliminary Remediation Goals (PRGs) for soil.

Uranium (half-life of 4.5 billion years) is a naturally occurring radioactive isotope, decaying primarily by alpha emission with accompanying gamma. Uranium produces several radioactive isotopes including radium-226 (Ra-226) and radon-222 (Rn-222), which have a half-life of 1,602 years and 3.8 days, respectively. Rn-222 is a radioactive isotope which naturally occurs as a gas, producing several radioactive radon decay products, including polonium-218, lead-214, bismuth-214, and polonium-214.

Thorium (half-life of 14 billion years) is a naturally occurring radioactive isotope, decaying primarily by alpha emissions with accompanying gamma. Thorium produces several radioactive isotopes, including gamma emitting actinium-228 (Ac-228), lead-212 (Pb-212), bismuth-212 (Bi-212), radium-224 (Ra-224), and thoron-220 gas (Rn-220). Ra-224 and Rn-220 have a half-life of 3.6 days and 55 seconds, respectively.

The selected remedy for the Removal Action is the excavation and off-site disposal of contaminated soils. Work zone activities at the Site will include, but are not limited to, excavation of subsurface radioactive soils along a ditch and gravel driveway and activities involving the loading and transporting of the contaminated soils for off-site disposal. Since Site activities could generate dust which may potentially contain elevated concentrations of radioactive particulates, the following objectives have been set for the Site air monitoring program:

- Establish Site-Specific Action Levels for dust/Site contaminants;
- Continuously monitor dust particulate concentrations in air to ensure that off-site migration of contaminants remains below the Site-Specific Action Levels;
- Collect confirmation dust particulate samples for radioactivity analysis to ensure that unhealthy levels of these contaminants are not exceeded in the ambient air; and
- Establish corrective actions to be taken in the event that temporary exceedances of Site-Specific Action Levels are experienced.

This Site-Specific CAMP outlines the air quality monitoring and sampling procedures to be followed to protect on-site personnel and the surrounding community from potential airborne contaminant releases during the implementation of the Removal Action.

2.0 PERIMETER AND COMMUNITY AIR MONITORING

2.1 Air Monitoring Procedures

Air monitoring activities will be conducted in accordance with the procedures outlined within the EPA guidance document entitled, *“Superfund Program Representative Sampling Guidance, Volume 2: Air (Short-Term Monitoring), Interim Final. 1995. EPA 540/R-95/140. (OSWER Directive 9360.4-09, PB 96-963206).”* Appropriate activities as outlined within this document include the monitoring necessary to ensure appropriate Health & Safety levels for protection of on-site personnel and to ensure that the surrounding community is not exposed to site-related constituents at concentrations above the Site-Specific Action Levels.

Particulate air monitors (e.g., DustTraks or equivalent) equipped with PM₁₀ (particulate matter smaller than 10 microns in diameter) detectors will be used to monitor dust levels throughout the duration of the Removal Action. The monitors will be operated each workday and will measure PM₁₀ dust concentrations in real time. The monitors are calibrated by the equipment manufacturer prior to being used at the Site. Once turned on, the monitors record dust concentrations on a 15-minute time-weighted average (TWA). Meteorological data consisting of wind speed, wind direction, temperature, and barometric pressure will be recorded each day to position the monitoring equipment in appropriate upwind and downwind locations. All air monitoring data with time, current activity and the locations of monitoring equipment will be recorded in the on-site files and will be available for review. Meteorological data will be obtained from Weather Underground (<http://www.wunderground.com/>) and recorded daily in the Site logbook.

Air monitoring will consist of continuous real-time air quality monitoring and data collection. Monitoring locations will be upwind, at areas of intrusive site activity, and downwind. The monitoring stations will be linked via EPA’s Viper wireless monitoring system, which will provide instantaneous real-time air quality readings through a computer server. The air monitoring data generated will help to determine if dust suppression activities are effective at maintaining dust levels below the Site-Specific Action Levels. Although air monitoring data from each monitoring station is automatically being stored real-time in a computer server, the air monitoring data will be downloaded from each DustTrak unit to a computer or electronic data storage device at the end of each workday.

Table 2-1: Air Monitoring Specifications

Direct Reading Instrumentation	Monitoring Locations	Monitored Parameters
DustTraks	<ul style="list-style-type: none">• Perimeter monitoring• Workspace monitoring	Total PM ₁₀ Particulates

2.2 Basis for Establishing the Air Monitoring Action Levels

The community air monitoring program at the Site consists of a combination of perimeter and community monitoring for particulates (dust). The Site-Specific Action Level for PM₁₀ has been based on the EPA National Ambient Air Quality Standards (NAAQS). The EPA NAAQS for total

PM₁₀ over a 24-hour period is 150 micrograms per cubic meter (µg/m³). There is no specified NAAQS listed for particulate matter containing Ra-226 and Ra-228. For this reason, a more conservative approach, of 0.100 mg/m³ (100 µg/m³) 15-minute average over background level, with a maximum of 0.150 mg/m³ (150 µg/m³) 15-minute average over background will be adopted as the Site-Specific particulate Action Level. See Table 2-2 for the air monitoring Action Levels for particulates at the Site.

Table 2-2: Community Air Monitoring Action Levels for Particulates (Direct Reading Instrumentation)

Parameter	Monitoring Locations and Interval	Action Levels (Above Upwind)	Response Activity
Dust (PM ₁₀)	Perimeter and community monitoring locations with dust readings every 60 seconds, calculate 15-minute average during Removal Action activities.	< 100 µg/m ³	<ul style="list-style-type: none"> Continue monitoring.
		≥ 100 µg/m ³	<ul style="list-style-type: none"> Continue monitoring. Begin dust suppression measures. Notify field crew that early warning alert level has been reached.
		≥ 150 µg/m ³	<ul style="list-style-type: none"> Cease activities; re-evaluate dust suppression measures. Analyze collected air samples for the contaminants of concern. If during transport and disposal of hazardous waste, commence community air monitoring.

2.3 Non-working Hours

No release of contaminants above background levels is anticipated during non-working hours, therefore, no monitoring will be conducted during that time period.

2.4 Equipment Maintenance and Calibration

All air monitoring equipment will be maintained in accordance with applicable manufacturer recommendations. All pertinent data will be logged in a health and safety logbook (or equivalent) and maintained on site for the duration of site activities. All direct-reading instrumentation will be calibrated in accordance with the manufacturer's instructions.

2.5 Engineering Controls

Dust suppression measures, utilizing a water mist, will be the primary engineering control used during all site intrusive activities. It will be implemented as necessary to prevent the generation of dust during soil excavation and soil handling operations. Water will be used to wet the surfaces of all contaminated soil stockpiles, loading areas, access roads, and areas being excavated as needed.

3.0 AIR SAMPLING

3.1 Air Sampling Procedure

In addition to particulate monitoring, perimeter and community air sampling will be performed using RADēCO H-810 air samplers and will be collocated with or near each DustTrak unit in the field. Each air sampler will contain a 2-inch filter holder with a RADēCO 0750-37 glass fiber air filter. The air samplers will be set to collect air filter samples at a flow rate of 5 cubic feet per minute (cfm) for a target volume of 2,400 cubic feet (cf) over an approximately 8-hour period. Each day, START V will calibrate the air samplers using the RADēCO Air Calibrator Model D-828 prior to deploying them. Calibration readings will be recorded using the RADēCO Model H-810 Calibration Functional Check Form F001 or documented in the Site logbook. Calibration forms/information will be reviewed and maintained on-site by the EPA Health Physicist (HP) prior to air sampler being used in the field.

Air filter samples will be collected at a minimum every 4 hours during intrusive site operations (*i.e.* one collected before lunch and another collected after lunch for each air sampler). All air filter samples collected will be placed in a glassine envelop before being placed in a re-sealable plastic bag. Air sampling information, including date, start and stop time, start and ending flow rates, and total volume will be documented using Sample Control Form and Chain of Custody Form F002, or entered into the Site-Specific Scribe sample management database from which sample labels and chains of custody (COC) record will be generated using the Scribe software. The sample label will be placed on the re-sealable plastic bag for each air sample, and documentation associated with the samples, including COCs, will be kept with the samples until relinquished to the field measurement personnel.

Upon receipt of the air samples, the field measurement personnel will count each air sample for 10 minutes using a Ludlum Model 3030 (Ludlum-3030). Each sample will be counted at a minimum daily until background levels are reached to ensure high measurements are due to radon and not airborne contamination. Daily air sampling results information will be recorded using the Personnel Air Monitoring and Exposure Estimate Form F003 and/or in the Site logbook.

Table 3-1: EPA Sampling Procedures

Analyte	Sampling Method	Sampling Media	Recommended Flow Rate (Liters per Minute)*	Total Volume	Site-Specific Action Level
Ra-226	Per EPA HP, utilizing RADēCO Air Sampler	Glass fiber air filter	5 cfm	2,400 cf	$3 \times 10^{-11} \mu\text{Ci}/\text{cm}^3$

*Actual flow rates will be determined in the field based on prevailing Site conditions. Humidity conditions and precipitation events may require air sampling activities to be cancelled for the day.

3.2 Basis for Establishing Air Sampling Action Levels

In order to protect on-site personnel and nearby residences from exposure to site-related contaminants, the Site-Specific Exposure Limit of air concentration for Ra-226 has been set by EPA at 3×10^{-11} microCurie per cubic centimeter ($\mu\text{Ci}/\text{cm}^3$) which is the same allowable air

concentration as the public limits. This Exposure Limit was adopted by EPA as the Site-Specific Risk-Based Action Level. For effective implementation of engineering controls, all air sampling results will be compared with the Site-Specific Risk-Based Action Levels. Most analytical results of air samples collected will be available on site for review the day after sample collection.

Based on air filter sample results, the EPA HP will determine if additional respiratory protection and/or potential administrative or engineering controls are needed, if exposure limits are exceeded. If analytical results of air samples indicate that the Site-Specific Risk-Based Action Levels were exceeded, the cause of the exceedance will be investigated, and appropriate corrective actions will be implemented immediately. An evaluation of additional engineering control options, additional off-site air monitoring/sampling and a reduction in daily work hours will also be considered. See Table 3-2 for the Site-Specific Risk-Based Action Levels established for the Removal Action.

Table 3-2: Community Air Sampling Action Levels

Parameter	Sampling Interval and Locations	Action Levels (Above Background)	Response Activity
Contaminants of Concern	Upon initiating intrusive activities and periodically; at perimeter and community monitoring locations	$<3 \times 10^{-11} \mu\text{Ci}/\text{cm}^3 - \text{Ra-226}$	<ul style="list-style-type: none"> Continue monitoring PM_{10}.
		$>3 \times 10^{-11} \mu\text{Ci}/\text{cm}^3 - \text{Ra-226}$	<ul style="list-style-type: none"> Cease activities; investigate cause. Re-evaluate dust suppression measures. Consider additional off-site air monitoring/sampling. Evaluate site conditions for other engineering control options.

3.3 Non-working Hours

No release of contaminants above background levels is anticipated during non-working hours, therefore, no air sampling will be conducted during that time period.

4.0 REPORTING OF AIR MONITORING AND SAMPLING RESULTS

4.1 Community Notification Procedures

The specific community notification procedures will be at the discretion of the EPA On-Scene Coordinator (OSC). The exact notification procedures will be developed based on the most feasible means of getting information to the surrounding community in an effective, useful, and timely manner.

4.2 On-Site Reporting Procedures

The Site health and safety representative will maintain a sample log and report airborne levels on a daily basis to the EPA OSC. Elevated results (above Action Levels) will be reported immediately to the EPA OSC so that appropriate engineering controls can be implemented to reduce airborne levels.

4.3 Reporting Procedures for Site Employees

Where personal sampling for on-site workers is performed, the contractor will be responsible for informing employees and subcontractors of their monitoring results to comply with Occupational Safety and Health Administration (OSHA) regulations and good occupational health practices. Within five working days after the receipt of monitoring results, the Contractor will notify each employee of the results representing that employee's level of exposure.

Whenever the results indicate that employee exposure exceeds the OSHA Permissible Exposure Limits (PELs)/EPA Risk-Based Action Level, notification shall be provided to the affected employee stating that the OSHA PEL/EPA Risk-Based Action Level was exceeded and providing a description of the corrective action taken to reduce exposures to a level below the OSHA PELs/EPA Risk-Based Action Level.

4.4 Reporting Procedures for the Analytical Laboratory

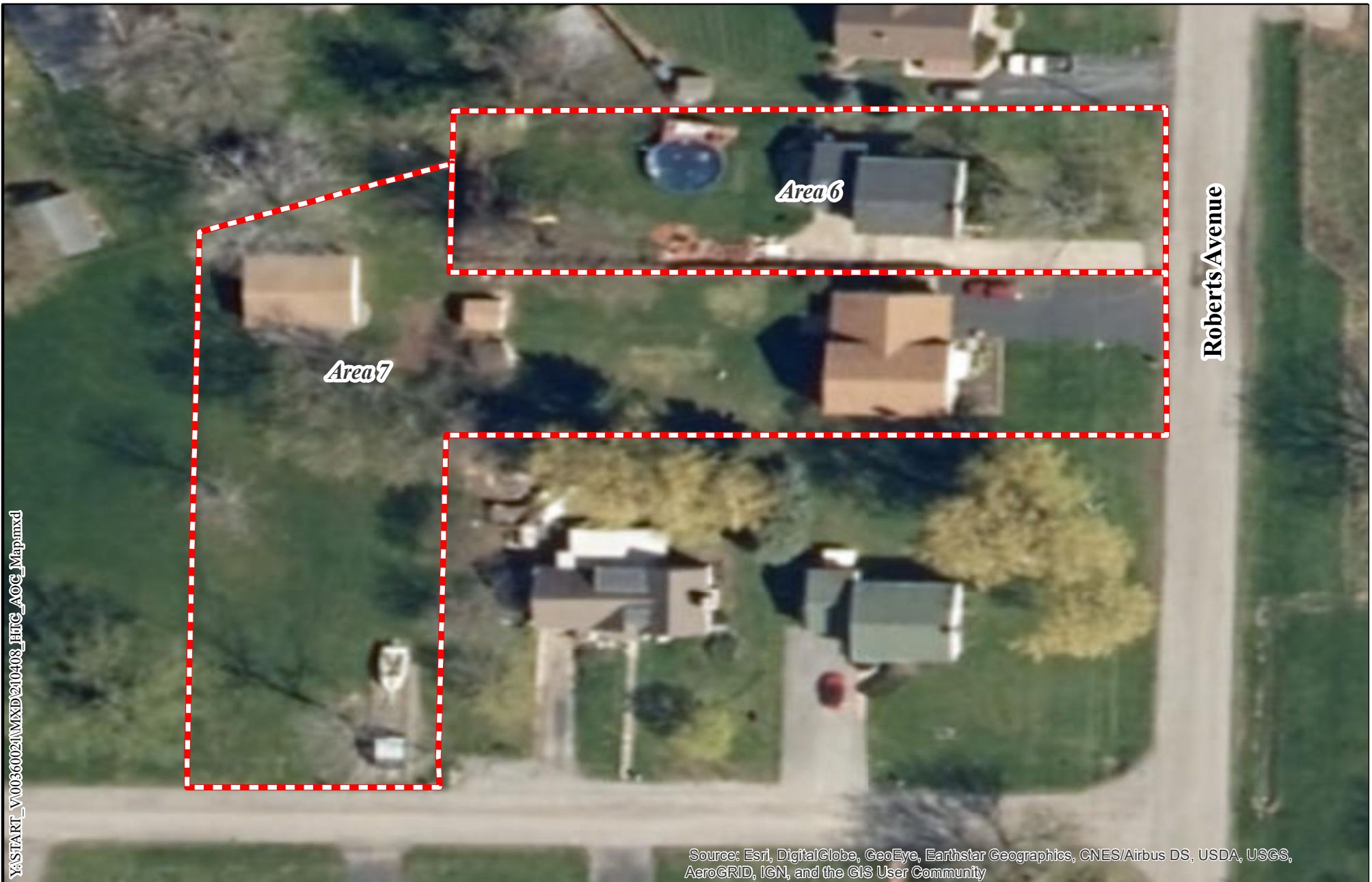
Although air samples will be analyzed on-site and not by an analytical laboratory, chain-of-custody (COC) procedures will be followed during sample handling and submission to field measurement personnel for analysis. Areas sampled, tasks performed, duration, volumes, and analytical results will be available on-site for review and an air sampling report will be provided by START V upon completion of the Removal Action. Sampling and analysis will be performed in accordance with the appropriate EPA method under the direction of the EPA OSC.

4.5 Data Review and Interpretation

The general public will be able to review the captured data for the Site once the air sampling data has been validated and finalized and based upon the EPA OSC's authorization for release of the information. Monitoring records will be maintained on site.

ATTACHMENT A

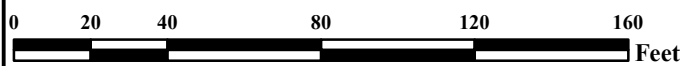
Area of Concern Map



Y:\START_V\00360021\MXD\210408_HTC_AOC_Map.mxd

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend
 Area of Concern




Weston Solutions, Inc.
Federal East Division

In Association With

Eco-Risk; Avatar Environmental, LLC;
 Pro-West & Associates, Inc.;
 On-Site Environmental, Inc.;
 and Sovereign Consulting, Inc.

Figure 1: Area of Concern Map	
HOLY TRINITY CEMETERY LEWISTON, NEW YORK	
U.S. ENVIRONMENTAL PROTECTION AGENCY SUPERFUND TECHNICAL ASSESSMENT & RESPONSE TEAM V CONTRACT # 68HE0319D0004	
GIS ANALYST:	M. LANG
EPA OSC:	P. LISICHENKO
START V SPM:	B. NWOSU
FILENAME:	210408 HTC AOC Map.mxd

DATE MODIFIED: 4/8/2021

ATTACHMENT B

EPA Air Sampling Forms

RADēCO Model H-810 Calibration Functional Check Form F001

Sample Control Form and Chain of Custody Form F002

Personnel Air Monitoring and Exposure Estimate Form F003



F001, RADeCO Model H-810 Calibration Functional Check Form

SECTION 1: INSTRUMENT DATA

Air Sampler Make:

Air Sampler Model:

Air Sampler S/N:

Air Sampler Calibration Due:

Air Filter Type:

Air Filter Size:

Flow Calibrator S/N:

Flow Calibrator Calibration Due:

SECTION 2: CALIBRATION DATA

Physical Condition of Instrument (circle one):

Satisfactory

Unsatisfactory

LINEARITY VERIFICATION

Reference (CFM)	Calibrator Flow (CFM)	Sampler Flow (CFM)	Comments
1.0			
2.0			
3.0			
4.0			
5.0			
6.0			

CALIBRATION RANGE		ENVIRONMENTAL CONDITIONS	
High Flow:	CFM	Temperature:	°F
Mid Flow:	CFM	Humidity:	%
Low Flow:	CFM	Pressure:	inches Hg
COMMENTS:			

Calibrated By:

Date:

Reviewed By:

Date:

Calibration Due:

SAMPLE CONTROL FORM & CHAIN OF CUSTODY

SCF -

☐ TABLET - Sample information entered on Tablet

Sampling Information (to be filled out by the Field Team)

Field Team:		Collector's Name:		Home Org:	
Longitude:		Location Description:			
Latitude:					
Collection Date:	Collection Time (24hr):	Area Exposure Rate:	Contact Dose Rate:		
Collection Comments:					

Sample Type (use only once)	Air	Sampler ID #		Type:	Filter size & Type: <input type="checkbox"/> Paper <input type="checkbox"/> Cartridge <input type="checkbox"/> 2" <input type="checkbox"/> 4" <input type="checkbox"/> Other		
		Date/Time ON:		Date/Time OFF:		OR	Total Volume: units:
		Start Flow Rate units		Stop Flow Rate units			
		Additional Air Filter, Provide Sample #					
	Milk	<input type="checkbox"/> Cow <input type="checkbox"/> Goat <input type="checkbox"/> Other:		<input type="checkbox"/> Stored Feed <input type="checkbox"/> Pasture <input type="checkbox"/> Other:			
		Milking Date:		Milking Time:		Number of Animals	
	Soil	Depth of soil sample: cm		Vegetation collected with soil sample? <input type="checkbox"/> If "YES" check box if "NO" leave blank			
		Sample surface area: cm ²		If vegetation in separate container, provide sample #:			
	Water	<input type="checkbox"/> Surface <input type="checkbox"/> Ground / Well <input type="checkbox"/> Potable / Tap <input type="checkbox"/> Other:					
	Other	<input type="checkbox"/> Food <input type="checkbox"/> Feed <input type="checkbox"/> Instrument <input type="checkbox"/> Swipe <input type="checkbox"/> Other:				Description:	
Sample Area (cm): L W H							

Sample Receiving (to be filled out by sample control & hotline technician)

Processing Priority:	<input type="checkbox"/> Urgent	<input type="checkbox"/> Duplicate	<input type="checkbox"/> Split	<input type="checkbox"/> Composite	<input type="checkbox"/> Blank
Receipt Contact Dose Rate uR/hr:	<input type="checkbox"/>	Contamination Check: Forms and sample bags surveyed.		Weight of Sample gram	
Analysis Requested:					
Remarks/Special Instructions					

Custody Transfer (Signatures)

Relinquished By:	Date/Time	Received By:	Date/Time
Relinquished By:	Date/Time	Received By:	Date/Time
Relinquished By:	Date/Time	Received By:	Date/Time
Relinquished By:	Date/Time	Received By:	Date/Time

Original with Sample

Copy to Sample Control

October 2011

SAMPLE CONTROL & CHAIN - OF - CUSTODY FORM

Field	Data
Tablet	Check if "Sample Information" is recorded using MPCD Tablet. Only Chain-of-Custody is needed.
SCF -	If no Barcode or Sample Control Number, then create one (SCF-XXXXX).
Collection Team ID	Enter Team Name or Number.
Collector's Name	Enter Collectors Name (Can be team captain).
Org	Enter Collectors Home Organization.
Location Description	Enter a description of the sample location. This can be an address with a description of the location in relation to local landmarks (i.e. near stop sign).
Latitude/Longitude	Estimated from map or read from GPS. The preferred format is degrees and decimal degrees. (i.e., Longitude = -108°.27976).
Collection Date	Enter the "Date" the Sample was Collected (dd-mmm-yyyy 02SEP2009). For air or composite samples this is the "Date Off" (end date of collection period).
Collection Time	Enter the Time the Sample was Collected (24 hour clock). For composite samples this is the "Time Off" (end time of collection period).
Area Exposure Rate	Record the average area Exposure Rate where the sample is to be collected.
Contact Dose Rate	If background permits, then enter the dose rate at contact with the sample container.
Collection Comments	Enter any pertinent information on the collection process (i.e. unusual occurrences).
Sample Type	Complete the appropriate "Sample Type". Use only one sample per form.
Air Sample	Enter Air Sampler ID, Type and Filter Size, Date On & Off (dd-mmm-yyyy), Time On & Off (24hr). Enter either Start & Stop Flow Rate or Total Volume and Units.
Additional Air Filter, Provide Sample #	Enter additional Air Sample # for each separate Air Filter Matrix taken at same location. (i.e. Paper & Charcoal Cartridge)
Milk Sample	Check the "Type" of milk sampled. If "Other", describe. Enter the "Feed Type" the cattle eat. If "Other", describe in the remarks. Enter Milking Date (dd-mmm-yyyy) & Time (24hr)
Soil Sample	Enter Depth of soil sample in centimeters. Enter the surface area sampled in centimeters ² (square centimeters). If a separate vegetation sample was collected indicate so and enter the sample number of the SCF for the vegetation sample. DO NOT ENTER TWO SAMPLES ON A SINGLE SCF.
Water Sample	Check the "Source" of the water sample. If "Other", describe.
Other	Check the sample type Food – Human Consumption, Feed – Animal Consumption, "Instrument" (Spectra to be saved in RAMS), "Swipe" or "Other"
Sample Area (cm)	Record the Area the Vegetation or Swipe Sample was taken from (Length, Width and Height).
Description	Enter the description of sample and the size or volume of sample (i.e. Vegetation 1-gal sealable bags grass, Swipe 100 cm ²).
Processing Priority	Identify Rush (Priority or Urgent) samples designated by the monitoring manager. 1 is high priority.
Duplicate Sample #	A duplicate sample is a second sample collected at the same location. Create duplicate paperwork and assign a new sample number to the duplicate and record the other sample number here.
Split Sample#	A split sample is a single sample collection split into two sample containers. Create duplicate paperwork and assign a new sample number to the split sample and record the new sample number here.
Receipt Contact Dose Rate	Samples are checked for activity as they pass through the hot line. Record the instrument reading and units.
Contamination Check	Check exterior of sample bags and forms for contamination. This step is performed at the hot line.
Weight of Sample	Record the Weight of Soil, Water & Vegetation Samples.
Analyses Requested	Record analysis requested by Assessment or Monitoring and Sampling Supervisors if known.
Remarks/Special Instructions	Enter any special instructions (i.e., homogenize sample). Indicate whether the sample must be prepared before being forwarded to the laboratory. Enter unusual circumstances discovered during sample receipt. Does not include problems recorded on the Non-Conformance Memo.
Relinquished by	Signed by person releasing custody of the sample. The custody must be relinquished to a person or secured area
Date/Time	Date and Time (24 hr) custody transferred
Received by	Signed by the person receiving the sample



F003 Personnel Air Monitoring and Exposure Estimates

Air Sampling Data

Sample collector _____
Sample start time _____
Sample flow _____
Sample Volume _____

Location _____ Date _____
Sample end time _____

Isotope _____ ☐ Alpha ☐ Beta ☐ Gamma DAC _____
Isotope _____ ☐ Alpha ☐ Beta ☐ Gamma DAC _____

Counting Data

Counter Type ☐ Ludlum 2929 ☐ Ludlum 3030 ☐ Other _____

Sample ID# _____ Date/ time sample collected _____
Sample submitted by _____ Date/time _____
Sample received by _____
Date/ time sample counted _____
Sample disposition _____

Background count time _____ Alpha _____ cpm Beta _____ cpm
Date/time first count: _____ Alpha _____ cpm Beta _____ cpm
Date/time followup: _____ Alpha _____ cpm Beta _____ cpm
Date/time followup: _____ Alpha _____ cpm Beta _____ cpm
Date/time followup: _____ Alpha _____ cpm Beta _____ cpm

Volume (cf)	Isotope	DAC	Count time	Bkg	Gross Alpha	Net Alpha	Net Count Rate	Air Conc	Fractional DAC
Volume (cf)	Isotope	DAC	Count time	Bkg	Gross Beta	Net Beta	Net Count Rate	Air Conc	Fractional DAC

Total fractional DAC _____

Exposure Estimates

EPD #	Exposure Time	Fractional DAC	DAC hrs	Respiratory Protection Factor	Adjusted DAC hrs	Projected Dose

Analyzed By _____ Date _____ Reviewed by _____ Date _____

When this form is completed with personnel names and exposure information, it becomes a confidential record and may be protected IAW Privacy Act 1974 or Health Insurance Privacy Portability Act.